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Several Statement on High Power EML and APD Rx

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Hao Feng

High Power, Low Current EML (I)

- High Power EML for up to 80km application

  → Designed for 800ps/nm (40km) & 1600ps/nm (80km) Application

  → Typical Spec: +3dBm ~ +6dBm for this application

  → Current Achievement: +3dBm@EOL or Typ. +4~+5dBm@BOL in production.

  → DFB Current is ~140~150mA max.

High Power, Low Current EML (II)

- For 20km Application

  → No dispersion issue

  → Re-design is expected for optimization of EML parameters to maximize the performance at 20km.

  → Additional DFB current reducing is possible with the same optical power.

  → EA Driver output is up to 3Vpp in production. Higher power driver is no problem in technology. It means the ER should not be a problem.

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10G APD Receiver (I)

- Current High Sensitivity APD Rx

  → Typical Sensitivity is ~ -28dBm

  → The APD current is < 1mA & APD bias ~ 25V, therefore, the power dispassion from APD bias circuit is <25mW.

  → The majority application is in 80km TDM & WDM.

  → Industrial temperature APD Rx is available in commercial.

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10G APD Receiver (II)

- 10G PON Application

  → Large volume expected

  → Large cost reduction expected

  → An example: B-PON to G-PON, 2.5G APD chip price reduced significant!

  → Industrial Temperature 80km XFP module w/ APD Rx is available!

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Questions on High Power Solution

- Digital down-stream has as high power as +10dBm and Analog channel may have +10dBm ~ +14dBm power too,

  Are there any problems on such high power?
- **Which more cost effect between single chip H-EML and EML+SOA/EDFA?**
- **Which approach is more flexibility for extend PON functions?**

  H-EML + APD or EML+SOA/EDFA+PIN?

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Summary

- +5dBm High Power EML and i-temp APD Rx are commercially available now!
- High Power EML TOSA and i-temp APD ROSA are available now! → Pluggable Module for both OLT and ONU are possible!
- Improved performance and lower cost TOSA & ROSA could be expected in coming 2 years!
- APD makes the 10G PON design more flexibility.
- H-EML+APD solution doesn’t change current PON structure at all.